Beyond Information. Intelligence.

Consulting

Database Marketing

Economic & Social Impact Studies

Research

Training

SMS

1042 Fort Street Mall
Suite 200
Honolulu, HI 96813
Ph: (808) 537-3356
Toll Free (877) 535-5767
Fax: (808) 537-2686
E-mail: info@smshawaii.com
Website: www.smshawaii.com

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

EXTREME SPEEDING LITERATURE REVIEW

SMS Affiliations and Associations:

Alan Barker Associates
Experian
Hospitality Advisors, LLC
International Survey Research
Latham Synchronized Relationship Marketing
Mediamark Research Inc.
NCQA Certified
Stephanie Kaneshiro – Big Island Affiliate
Warren Dastrup – Kauai Affiliate

Prepared by:

SMS Research & Marketing Services, Inc.

September 2003

Department of Transportation
Hawaii Highway Safety Social Marketing Program
Sub-Section: Extreme Speeding

Summary of Existing Information

TABLE OF CONTENTS

LIST OF APPENDICES

I. PLANNING OVERVIEW

Objective

The objective of this phase of the project is to identify what types of research & social marketing programs have been done in Hawaii, the US and the world that will provide additional insight into programs/actions that will deter motorists from extreme speeding.

Target Segments

Based on the literature review the target group of extreme speeders that will be further explored is comprised of the following:

- Young Males Between the Ages of 16 and 25 -
  Statistics show that this demographic accounts for the highest percentage of speed-related vehicle fatalities.

We will also consider whether the research should focus on the additional groups of speeders below:

- Females Under the Age of 20 -
  Recent studies indicate that females' tendencies to speed are becoming very similar to males of the same age.

- Subgroups of Speeders -
  Other key characteristics exhibited by speeders are those who drive alone, own a vehicle less than four years old, and commute long distances.

Next Steps

Areas that require additional examination of the target groups through the telephone survey and focus groups are as follows:

- Motivations and situations that "cause" an individual to speed at an extreme level
- Roadways where drivers think that it's OK to extreme speed
- The overall social acceptance for speeders
- The impact of changing the likelihood of being caught
- The perceived seriousness of crime for speeding
- The impact of previous speeding programs on the acceptability of speeding today

II. INTRODUCTION

In the United States, almost one of every three traffic fatalities is speed related. Much of the public's concerns about safety are directed toward the highway systems due to the greater risk of injuries and death when vehicle speeds increase. According to the Federal Highway Administration (FHA), almost 50 percent of speeding related fatalities occurred on roadways with speed limits ranging from 35 mph to 55 mph. In 2001, over 12,000 motorists died in speed related crashes, giving an average of 1,000 fatal collisions every month.

The nation's Basic Speed Rule states that, "A person shall not drive a vehicle at a speed greater than is reasonable and prudent and having regard to the actual and potential hazards and conditions then existing." Speeding, as defined by the Hawaii traffic laws, is exceeding posted limits by at least 10 mph while excessive speeding is driving more than 15 mph over the limit. In addition, an excess of 15 mph over any posted speed limit is considered to be reckless driving under the state's laws. Hawaii's absolute maximum highway speed limit, set at 60 mph, is among the lowest in the nation, which means drivers traveling 75 mph or faster are classified as reckless and extreme speeders. Efforts to keep drivers within 10 mph of the posted speed limits will greatly reduce the number of crashes on Hawaii's roadways. State statistics show that 25 percent of the 140 traffic fatalities during 2001 were speed related.

Of all the drivers involved in fatal crashes in the United States, young males under the age of 25 are most likely to have speed as the cause. According to a 1999 study conducted by the National Highway Traffic Safety Administration (NHTSA), males were more likely than females to enjoy the feeling of speeding in a vehicle (46 vs. 32 percent) and worry less about the dangers of a collision (41 vs. 32 percent). Besides young males, researchers in Australia discovered that drivers who would most likely exceed the speed limit fell into one of the following nonexclusive categories: less than 25 years of age, drove alone, owned newer vehicles, traveled for business purposes, and had high annual mileage (Fildes et al. 1991).

The 1999 national speed survey conducted by the NHTSA cited that the most common reason for motorists that were stopped for a traffic violation was due to speeding (62 percent). Most drivers do not perceive speeding as a criminal act (Corbett 2001), which means attempts to discourage extreme speeding will be difficult to achieve. Webster and Wells (2000) recommended that a combination of publicity, training, and engineering measures would be most effective in curtailing speeding behavior. In addition, various techniques in law enforcement have also deterred extreme speeding, but there have been minimal efforts in the area of social marketing in creating a stigma toward speeders.

III. RESEARCH ON SPEEDING

Many national and international studies have focused on issues concerning speeding, with many of the domestic reports citing national statistics provided through the NHTSA and FHA. Recent comprehensive research has come from international projects in Australia and Europe. These studies have laid the groundwork to help develop a deterrence campaign for extreme speeders in Hawaii.

Frequent topics in the aforementioned research fall into the following five categories:

(1) Speed and safety relationship
(2) Factors influencing speed
(3) Profiles of speeders
(4) Drivers attitudes toward speeding
(5) Effects of deterrents such as law enforcement and publicity campaigns

Speed and Safety Relationship - Key Facts

All motorists, speed limit compliant or not, are put in danger when there are speeders on the roadways. In developing an anti-speeding campaign, drivers should be made aware of the negative effects caused when vehicles are traveling at high speeds. The following facts demonstrate the decrease in safety when speeding:

- Extreme speed reduces the driver's ability to react, lengthens stopping distances, increases both the likelihood of crashing and the severity of a collision.
- Crash severity increases by the square of the speed so that, when speed increases from 40 to 60 mph, speed goes up 50 percent while the energy released in a crash more than doubles. Thus, greater amounts of energy need to be dissipated, which leads to an increased likelihood of injury or death.
- A vehicle is subjected to forces to the point that it cannot withstand the force of the crash and cannot sufficiently protect occupants from serious injury. The performance of restraint systems such as airbags and safety belts are compromised in high-speed crashes.
- In states where speed limits were raised to 65 mph in 1987, the higher limits caused about 15-20 percent more deaths on rural interstates each year than otherwise would be expected (hwysafety.org).

- Studies show that there's a U-shaped curve between vehicle speed and crash incidence, with crash rates at their lowest for travel speeds near the mean traffic speed (Solomon 1964). In other words, a vehicle that travels 10 mph over or under the posted speed limit increases the likelihood of a crash. (See Figure 1)

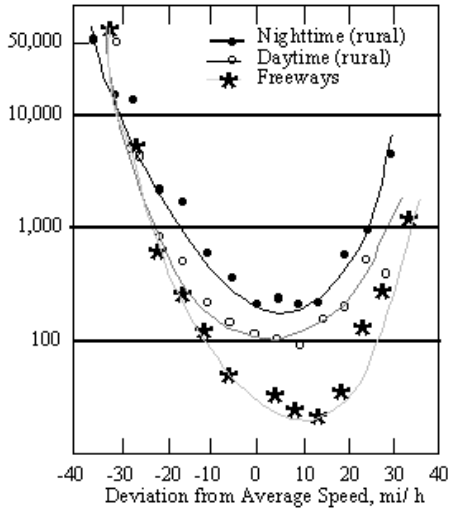


Figure 1. Crash involvement rate by deviation from average travel speed (from Solomon, 1964, and Cirillo, 1968).

Factors Influencing Speed – Key Facts

The reasons that a driver chooses to speed come from a combination of external and internal factors. Speeders demonstrate a sense of judgement and a degree of confidence based on certain situations that they incur as a driver. Factors that play a role in one's decision to speed are as follows:

- The majority of motorists select their speed to reach a destination in the shortest time possible while trying to avoid endangering themselves, others, and their property (Turner-Fairbank Highway Research Center).
- Road characteristics also contribute to a driver's decision to speed. The most significant elements of the road include the curvature, grade, length of grade, number of lanes, surface condition, sight distance, lateral clearance, number of intersections, and built-up areas around the roadway (Warren 1982).
- Silcock *et al* (2000) explored driver's reasoning toward speeding and listed the following eight most prevalent reasons:
    - Unintentional
    - In a hurry (e.g. to collect a child at school)
    - Being forced to speed (by a tailgater)
    - The speed limit was wrongly set for the location
    - They felt that their car could stop fast enough to avoid danger
    - The same speed limit does not apply at all times (an empty road or late at night)

- A speed limit does not apply to above average drivers
- Speeding is acceptable if it is not habitually broken

Other factors related to speeding as identified by Silcock *et al* (2000) were self-image, vehicle power and comfort, culture, passengers, enforcement, and road type.

- Drivers in a vehicle alone were more likely to exceed the speed limit, while those with two occupants were less likely to exceed the speed limit (Fildes *et al* 1991).
- Rietveld and Shefer (1998) revealed additional speeding considerations that related to cost. The findings reported travel time costs, costs of arriving late to a destination, monetary costs of choosing to drive, costs of accidents, and costs of traffic fines. The study also pointed out that drivers do not consider external costs in making their decision to speed based on private costs incurred through fines.
- Stradling *et al* (2000) found a link between speeding and employment. The study showed that people whose employment required them to travel tended to drive faster, break traffic laws, and equate to low scores on self-reported safety surveys.

The literature reviewed regarding drivers' decisions to speed fall in line with speed zoning practices. Parker (1985) concluded that all states and most local agencies within the United States primarily use the following considerations:

- 85^{th} percentile speed
- Type and amount of roadside development
- Accident statistics
- Adjacent speed limits
- 10 mph pace (e.g. speed range that contains the largest amount of vehicles)
- Horizontal and vertical alignment
- Design speed
- Average test run speed
- Pedestrians

Profiles of Speeders – Key Facts

Numerous studies point out that young males are the most likely to speed. Beyond this majority group are various characteristics that involve personality type. It was also discovered that there is no difference among speeders when criminal background is considered. More details on the profile of speeders are as follows:

- Extreme speeders are most often male and younger than 30 (hwysafety.org).
- A study by Buchanan (1996) for the Scottish government found male drivers were four times more likely to commit a serious speeding offense than female drivers.

- A study in Scotland showed that males who reported to have been involved in an accident within the last three years indicated that they were more likely to drive faster when running behind schedule, late for an appointment, traffic is moving fast, or feeling stressed (Stradling *et al* 2003).
- Arnett (1996) found that "driving over 20 mph over the speed limit correlated positively with "sensation seeking men."
- Contrary to many studies that have pointed out men as speeders, Wasielewski (1984) found that speeding was not gender specific.
- Another study revealed that the degree of risk taking among three different age groups were similar for males and females, and it was suggested that females were less likely to admit to risk taking while driving (Boyce and Geller 2002).
- Parker and Standling's (2001) research showed that female drivers under the age of 20 reported similar tendencies to speed as male drivers within the same age group.
- Studies in California have found that the rate of speeding violations per mile traveled is at least three times as high for drivers 16-19 years old as it is for drivers age 30 and older (hwysafety.org).
- The relative proportion of speed-related fatal crashes decreases with increasing driver age. About 37 percent of all drivers ages 16-19 involved in fatal crashes were in speed-related crashes, but the percentage among drivers 70 and older decreased to 7 percent (NHTSA).
- Most speeders tend to be risk takers and exhibit the characteristics of a Type A personality, which include the following people that:
    - are always on the move
    - have a strong sense of urgency
    - check their watches more frequently
    - are often obsessed with their work
    - are extremely competitive
    - want to get things done and they will do almost anything to accomplish their goals

- People who usually comply with the law often commit speeding offenses (Corbett and Simon 1999).
- The act of speeding is not correlated with any criminal activities among drivers ranging from law abiding citizens to career criminals (Rose 2000).

Drivers' Attitudes Toward Speeding – Key Facts

Many drivers exhibit a lax attitude toward speeding and do not regard it beyond a minor traffic offense. Those that believe there is a relatively low likelihood of being cited build the confidence to speed. This is further exploited by drivers knowing that they are able to quickly slow down in the presence of law enforcement. Further details on driver attitudes are below:

- Motorists perceive and experience a low likelihood of being caught for speeding. The rate of non-compliance with posted limits supports this belief among speeders. A Queensland Transport study in 1994 found that more than half of respondents thought it would be unlikely that they would be caught by the police if they broke the speed limit.
- Speeders perceived being caught as a chance they had to take (System Three 1997).
- DETR (2000) found that breaking the speed limit is not viewed by many drivers as a criminal act.
- Brook (1987) surveyed drivers to rank eight crimes and "driving at 50 mph in a 30 mph limit" was rated the least serious as shown in the table below:

Rank order	Crime Listed
1	Injuring a pedestrian while driving carelessly
2	Driving after drinking too much
3	Burgling from a house while the owners are away
4	Driving after disqualification by a court
5	Vandalizing a telephone box
6	Driving through a red traffic light
7	Shoplifting from a supermarket
8	**Driving at 50 mph in a 30 mph limit**

Source: Brook 1987

- Research in California shows that the average speed that teenagers felt was too fast was 88 mph while teenagers in drivers' training for a traffic violation had an average of 93 mph as being too fast.
- One of the main reasons for speeding given in a survey conducted by Christchurch City Council (Hensley 1999) is "the pleasure of driving fast," which was followed by "showing off."
- The relatively changable condition of speeding compared with the fixed condition of drunk driving enables drivers to alter their behavior from illegal to legal fairly quickly. Therefore, many motorisits believe they can minimize the risk of getting a ticket by being aware of police presence and altering their speed accordingly. Also noted, offending motorists who are apprehended for speeding generally feel unlucky (Travelsafe 1994).
- Corbett *et al* (1998) found that drivers accepted that there was a link between speed and traffic accidents, but did not make the same connection between their speeding habits and their risk of getting into a collision.
- According to conclusions provided by Travelsafe (1992), speeding has been considered to be fundamentally different from other types of driving safety behaviors. Many times it benefits the motorist to drive faster, and it is often

glamorized through mass media. This makes speeding behavior somewhat resistant to change.

Effects of Deterrents: Law Enforcement And Publicity Campaigns – Key Facts

The first section on deterrents cover recommended approaches. Two studies supported a triad approach for a traffic safety campaign in order for it to be successful. An explanation of the recommended techniques is as follows:

- System Three (1997) recommended that effective speed enforcement begins with the driver's perception of the offense as morally or merely technically wrong, the likelihood of detection, and the severity of punishment for the offense.
- Consistent findings are shown through Tyler's (1990) examination of the three key factors for law compliance, which include deterrence, peer opinion, and personal morality.

The second section on deterrents goes over law enforcement techniques. The studies reviewed explain the effectiveness of police cars, automated enforcement, and speed trailers. Further details are provided below:

- Shinar and Steibel (1986) demonstrated the effects of stationary versus mobile police presence in the relationship between perceived risk of getting a citation and breaking the speed limit. The researchers found that drivers obey the speed limits more often while in the vicinity of a police vehicle and diminished with increased distance. The distance halo effect was much greater for mobile than it was for stationary police vehicles.
- The effects of automatic enforcement (laser detection and a photograph) on speeding are most effective when combined with publicity and warning signs (Maekinen and Oei 1994).
- In a before and after study of photo radar in Norway, Elvik (1997) found that a 26 percent reduction in injury-related crashes at sites that had high accident rates and density.
- In 1997, Perrillo observed speed reductions of 2 to 3 mph on roadways with speed feedback trailers for the period of two days on residential streets in Texas. Motorists' speeds returned back to their previous level as soon as the feedback indicator was removed, rendering the trailers as an ineffective long-term deterrent.

The third section on deterrents describes anti-speeding campaigns. Again, it is imperative for a campaign to be carried out concurrently with publicity and strict law enforcement in order for it to be effective. Case studies of localized anti-speeding campaigns are reviewed below:

- A large proportion of citations reviewed concerning speed enforcement mention some form of public information, educational program, or publicity, but none resulted in a significant reduction in speeding, crashes, or crash severity to any such campaign that was closely linked to an enforcement or engineering program (Turner Fairbank Highway Research Center).
- In Huntington Beach, California, police placed portable traffic enforcement warning signs at the beginning and the end of a targeted roadway and cited all violations within the area. This resulted in a 17 percent reduction in injury crashes and a 100 percent reduction between the introduction of the traffic enforcement and warning sign program in the Stuster (1995) study.
- In 1995, Stuster reported of a program that took place during 1983 in Wisconsin. The "EZ" program created enforcement zones around the ten most dangerous intersections by wrapping signs around every light pole within one block of a targeted intersection. The police officers issued "EZ" cards for minor violations instead of citations. The cards profiled the ten most dangerous sections within the city. The cards were also handed out to drivers that complied with the speed limit. During the program, the city maintained a 30 percent reduction in traffic violations over a three-year time period.
- The Selective Traffic Enforcement Program (STEP) was developed in Boise, Idaho in 1979. The STEP program combined aggressive traffic enforcement with highly visible public information and education campaigns. The campaign informed the community of the genuine interest of the police department to increase road safety through radio broadcasts. In addition, STEP educated motorists of dangerous road locations, how driver behavior made the areas unsafe, and how traffic enforcement would curtail the problem in these areas. The success of the program demonstrated a 17 percent reduction in the number of crash-related injuries.

Overall, the research reviewed in the previous five subsections will help shape a study in Hawaii based on an understanding of speeders and proven practices that have dissuaded their behavior. Hawaii motorists will be researched in lieu of the findings presented in the national and international studies. The results of the upcoming study will use the secondary research as a baseline comparison with Hawaii's drivers in terms of awareness, attitudes, and behaviors. If the findings fall in line with the speed-related studies presented in the literature review, further action will be taken in developing an anti-speeding campaign that runs parallel with historically successful programs. More specifically, ideas from the deterrence methods can be adapted to a program specific to Hawaii drivers.

IV. BEST PRACTICES FOR DETERING SPEEDERS

The NHTSA has developed detailed guidelines for initiating a municipal speed enforcement program. The guidelines touched upon Tyler's (1990) examination of the three key factors for a successful implementation of a traffic safety program, which

include deterrence, peer opinion, and personal morality. Most importantly, the NHTSA stresses the value of effective publicity for a traffic law campaign.

A highlight of proven guidelines provided by the NHTSA is outlined below for the areas of program initiation, suggestions for enforcement, and committee development.

Focusing the Program:

- The first objective of the traffic safety campaign is to select a focused program. In this case, it will be directed toward extreme speeding. Measurable success is increased when one traffic safety issue is singled-out for a public campaign.
- The speeding issues can be identified by reviewing previous studies and campaigns as well as speeding statistics.

Suggestions for Speed Limit Enforcement:

- Four enforcement zones within a community should be selected based on the area's statistics on speeding and crashes. The zones are not limited to the recommended number of designated zones. (See Appendix A for prospective zones on Oahu)
- Two additional zones can be selected based on repeated complaints from area residents. The prospective areas will be further compared with speeding and crash statistics.
- The hours of aggressive enforcement should take place during periods in which statistics show the greatest crash risks or incidence.
- Generate public awareness of the enforcement areas under the objective of increasing public safety and not as an effort to give citations.
- On average, about 200 hours per month should be dedicated to each of the traffic zones, with officers averaging about 8.5 hours per week at a specified location.
- The objective is to maximize the visibility and awareness of police presence in the designated zones.
- Enforcement is best accomplished through a team effort in which officers trade off zone monitoring.
- The commitment to aggressive traffic law enforcement should be maintained for a period of at least six months.

Developing a Public Information and Education Program:

- Success in a speed limit compliance program increases when law enforcement develops the campaign in coalition with civilian volunteers.
- A committee of officers and civilians needs to be formed and clearly explained the programs objectives.
- Civilian committee members can include any of the following groups:
    - Concerned citizens

- Hospital staff
- Counselors
- Elected officials and representatives
- Police supervisors in charge of safety issues
- Public and private organizations with a vested interest in traffic safety
- Insurance companies
- Bars and restaurants
- Social organizations

- The committee's activities are to actively promote and support the speed enforcement efforts, educate the high-risk groups about speeding, and participate in highly visible events.
- Prior to addressing the public through a press conference, the committee should select a campaign name that is easily recalled by the community.
- The problem of speeding should be presented and backed-up with statistics and educational packages. The public should be aware of the committee personnel as well as their genuine interest in the safety of the drivers through strict speed enforcement.
- The information provided would be focused toward the group that is at the most risk in order to reshape their attitudes toward speeding.
- Educational packages covering the effects of speeding can be distributed to high schools, colleges, supermarkets, restaurants, and military installations. Awareness of the program can also be increased through outdoor advertising, leaflets, and public speakers.
- Professionally produced radio and television public service announcements (PSAs) should also begin at the launch of the speeding program.
- After about three months of the program, provide feedback to the community concerning the program's efforts by reviewing speeding and crash statistics. This information would be incorporated into further reinforcement strategies for publicity and education.

As stated by the NHTSA, successful traffic safety programs are focused, involve cooperation between law enforcement and civilians, and generate public awareness through the most effective channels. These guidelines will be used in developing Hawaii's anti-speeding campaign in the future. The exact methodology of the program will be influenced by the findings in the upcoming study concerning Hawaii speeders.

VI. CHANGING THE SOCIAL VIEW TOWARD SPEEDERS

Although the NHTSA detailed the launch of a successful speed deterrence program, it did not cover the issues concerning the social views toward speeding. More specifically, the guidelines did not identify the implications of peer opinion and personal morality in reshaping drivers' attitudes directed at speeding. Both of the factors were significant in successfully implementing a traffic law campaign as stated by Tyler (1990).

A report developed by the Parliamentary Travelsafe Committee of Queensland in 1994 referenced efforts to change social attitudes toward drunk driving before a number of deterrent campaigns were launched in the early 1980s. The report cited that the public's views toward drunk driving did not consider the offense to be dangerous or anti-social. The change in drunk driver behavior was attributed to the Random Breath Testing program in its association with publicity campaigns. These efforts increased the awareness toward the risk of drunk driving by first altering behavior, which later reshaped individuals' attitudes. The study then made the connection to changing the public's social acceptance of speeding and argued that automated enforcement cameras would be the first step to increase the perceived risk. Then over time, the public's attitudes toward speeding would consider the violations to be anti-social and dangerous, as how drunk driving perceptions have been shaped to the present.

The Travelsafe (1994) study also reviewed two types of deterrence categories, specific and general. As defined by Fildes and Lee (1993), specific deterrence is based on the assumption that drivers who are singled out and cited for speeding would discourage the individual from breaking the speed limit in the future. The researchers also defined general deterrence, which is based on the assumption that the public's mass exposure to enforcement, receiving a citation or not, will deter individuals from speeding for fear of detection and penalty. The success of specific deterrence depends on large numbers of individuals receiving speeding violations. In most cases, only a small portion of the general public would adhere to the current speeding campaign. On the other hand, general deterrence has the potential to influence the behavior of all drivers exposed to the campaign either through publicity or a citation. An extensive publicity campaign to deter speeders along with a highly visible police presence will increase the overall perceived risk among a community's motorist. Over time, perceptions toward speeders will increase in negativity with a widespread acceptance that speeding is very dangerous to everyone in society.

In a study conducted by Haglund and Aberg (2000), it was discovered that the behavior of other drivers is important in influencing the attitudes of speeders. The researchers revealed that providing information on statistics covering drivers complying with the speed limit is an effective method in deterring the decision to speed. Therefore, the majority of law-abiding drivers will have a significant influence on the minority of speeders when a speeding campaign involving law enforcement, peer groups, and changes in personal morality is implemented.

Under the principles presented in the two studies above, Hawaii's anti-speeding campaign should consider a similar approach in reshaping the public's thoughts toward speeding. The degree of effort will be determined once the attitudes of Hawaii's drivers in reference to speeding are evaluated. If the upcoming campaign is able to influence the majority of the public, similar results will prevail over time among the minority of extreme speeders.

VII. CONCLUSION

Various reports and studies cited in this literature review provide an insight into the relationship between speed and crash impact, types of people that tend to extremely speed, influencial factors, public attitudes, and effective deterrents. The studies are focused mostly on speeders in general with subsections reported on extreme speeders. In light of the research reviewed, efforts to deter speeders should be considered in the context of extreme speeding.

Young males under the age of 25 years old serve as the prime target for an extreme speeding campaign. Studies have illutrasted that this demograpic has been linked to the majority of speed-related crashes and fatalities. On the other hand, some research showed that speeding was not gender specific for drivers under 20 years of age. Therefore, equal attention should be given to both young males and females when directing the campaign. Other than gender, the characteristics covering other subsegments of speeders included those who drove alone, owned a newer car, travelled for business, and had high annual mileage.

In creating a speed deterance campaign specific to Hawaii, the differences in the state's demographics and roadway system must be taken into consideration. Given the time difference and locations of the studies that were conducted in the reviewed research, a current study of perceptions and behavior concerning speeding needs to be gathered with objectives geared toward Hawaii motorists.

Addtional areas that need to be explored among Hawaii motorists through primary research that were not available in the literature review include:

- Motivations and situations that influence an individual to speed
- Percieved risk of being caught
- Rating the severity of crime for speeding
- Social acceptance of speeders
- Perceived dangerous and safe locations in Hawaii
- Roadways in Hawaii where motorists admit to speeding
- Awareness of previous speeding campaigns in Hawaii
- Degree of influence of Hawaii's speeding campaigns

Once this information is gathered and analyzed, planning for a speed-related campaign for targeted Hawaii motorists can commence.

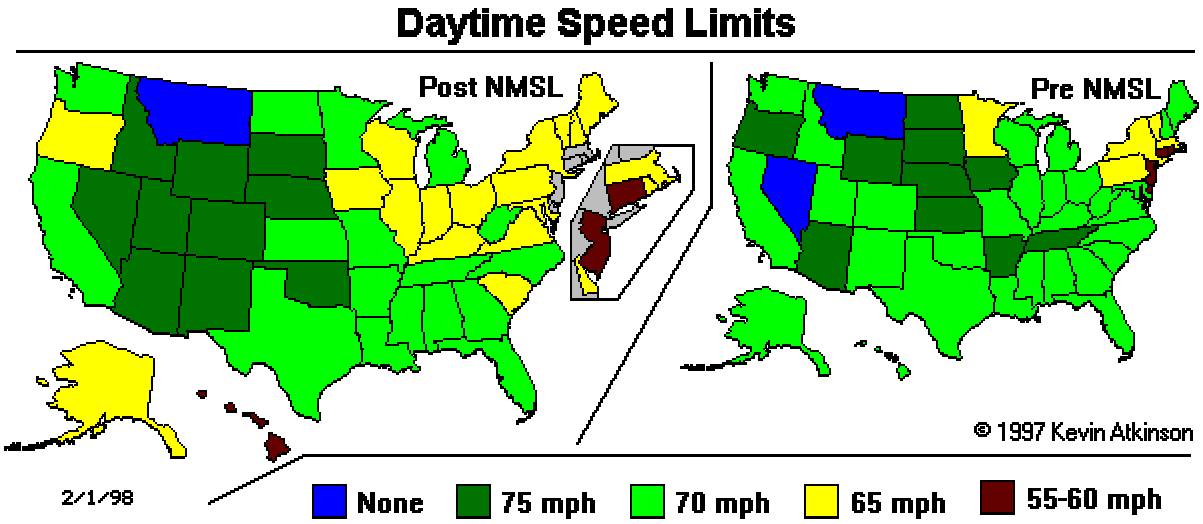
APPENDIX A: OAHU'S MOST DANGEROUS ROADWAYS

Speed-Related Traffic Fatalities & Injuries Island of Oahu (1998-2000)				
Area	Total Major Crashes	Speed-Related Crashes	Speed-Related Fatalities	Speed-Related Injuries
H-1, Honolulu-Campbell Ind Park	2,289	224	6	137
Nimitz Hwy/Ala Moana Blvd	751	72	3	46
Farrington Hwy, Campbell Ind Park-Makua	592	66	5	26
Kamehameha Hwy, Wahiawa-Laie	565	71	1	45
Pali Hwy	486	53	4	31
Likelike Hwy	366	53	0	22
Kamehameha Hwy, Laie-Kahaluu	298	31	2	22
H-2	212	33	1	19
H-3	201	45	1	19
Kunia Road, Kunia-Wahiawa	134	20	2	17
Kamehameha Hwy, Stadium-Airport	73	10	0	8
Farrington Hwy, Waialua	56	10	1	7

Source: Hawaii Department of Transportation

APPENDIX B: NATIONAL SPEED LIMITS

This map has been provided to demonstrate Hawaii's maximum highway speed limit relative to the rest of the nation. Hawaii's previous limit prior to the 55 mph National Maximum Speed Limit (NMSL) was set at 70 mph, which means extreme speeders were driving at least 85 mph on Hawaii's highways. Presently, the maximum speed limit in Hawaii is 60 mph, with 75 mph and above considered to be extreme speeding. At 60 mph, the maximum highway speed limit in Hawaii is among the lowest in the nation.



Source: Kevin Atkinson for Reasonable Driver's Unanimous

APPENDIX C: HISTORIC ESTIMATES OF DRIVERS THAT EXCEED SPEED LIMITS IN HAWAII

Police estimate that 75% of Oahu drivers exceed the 55 mph highway limit (Advertiser 7/27/89).

DOT monitoring estimates the overall statewide rate at 46.9% for drive that exceed the speed limit (Central Sun Press 7/17/86).

Transportation Service Director Parker says up to 97% speed on some roads (Advertiser 11/24/81).

APPENDIX D: COMPLETE ARTICLE ON EXCESSIVE SPEEDING IN HAWAII

Some speed demons caught traveling 90 mph or faster

Star-Bulletin staff

February 2002

Some traffic camera operators photographed vehicles traveling 90 mph or more, according to state Department of Transportation Director Brian Minaai.

And numerous vehicles were recorded traveling between 75 and 85 mph, Minaai said.

One camera recorded a vehicle traveling 93 mph in the Waianae-bound lanes of the Moanalua freeway near the Ala Kapuna overpass, according to a news release from the DOT. The speed limit there is 50.

The violation was recorded between 8 and 9:30 p.m. DOT did not release the date of the infraction.

Minaai said the photo citation program is intended to curtail reckless driving.

"Anyone who drives 85 or 100 percent over the posted speed limit is a threat to everyone else on the road," he said.

Other speeding violations reported by the DOT in the last six weeks:

>> Pali Highway, Kailua-bound: a vehicle traveling 90 mph where the speed limit is 45. The violation was recorded between 9:30 a.m. and 11:30 a.m.

>> H-1 freeway, Waianae-bound at the Makakilo overpass: a vehicle traveling 85 mph where the speed limit is 55.

The violation was recorded between 10 a.m. and noon.

>> During a three-hour daytime shift on the H-1 freeway, Waianae-bound at Waikele, a total of 170 violations were recorded.

APPENDIX E: COMPLETE ARTICLE ON SPEEDING RELATED CRASHES IN HAWAII

Statistics show that speeding is responsible for a rising number of fatalities on Oahu, and motorists are getting more aggressive

By Jaymes K. Song
Star-Bulletin
May 12, 1999

▲▲▲

Speed is killing Oahu motorists.

And more people are speeding than ever before.

Speeding was the leading cause of traffic fatalities on Oahu last year, accounting for 27.8 percent of the 63 deaths, according to police statistics. Drunken driving accounted for 6.7 percent. A combination of speed and alcohol was blamed in 24.5 percent of the fatalities.

This year, 17 people have died in 16 crashes on Oahu roadways, and speeding was a factor in half of the crashes.

Capt. Bryan Wauke of the Honolulu Police Department's Traffic Division said "alcohol gets a lot of attention" but speeding has to be addressed.

Programs such as Mothers Against Drunk Driving have helped bring down the drunken-driving death toll to the lowest numbers in 30 years. And police hope some programs will be created to deter speeding.

Meanwhile, police are cracking down on heavy-footed drivers.

But even with beefed-up enforcement, drivers are still going faster and faster, police said.

HPD issued 28,657 speeding citations in 1998. On average, that's one ticket issued last year for every 20 registered drivers on Oahu.

Violations are 32 percent higher than the previous year's total of 21,791 and nearly double 1996's total of 15,835.

Police say they also have noticed more people driving aggressively -- changing lanes more frequently, tailgating, not slowing down for pedestrians and running yellow and red lights.

And aggressive driving can lead to "road rage."

So why are people driving faster and more recklessly?

Police suggested it's because of congestion on the island's roadways and people becoming more impatient.

University of Hawaii psychology professor Leon James -- who has studied driving habits for 20 years and is nicknamed "Dr. Driving" -- said it is a "cultural norm to drive fast and aggressively."

Driver education doesn't start as a teen-ager, James said; it begins at childhood. Children absorb and watch the parent's driving style, behavior, emotions and attitude while on the road.

"They learn it's OK to be hostile, use bad language and yell at people," he said. "It's not OK face to face, but it's OK in your car."

As far as the increase in speeding, James said it can be attributed to two things: a group of people -- mostly males 15 to 24 years old -- who are "speed freaks," and a large portion of the population suffering from "rushing mania."

Driving fast is kind of a macho thing for the speed freaks, James said. The speed freaks are influenced and bombarded with car commercials, video games and television shows -- "it's all speed."

Rushing mania is something James used to suffer driving on the Pali Highway to the university.

Some say they have less time and a faster pace of life than before. And that may be true, James said. But people have rushing mania even when they're not late or in a rush.

"I have it (rushing mania) from just feeling the stress when it's slow," he said. "When a driver is slow in front of me, that becomes stress for me.

"Instead of going around, or slowing down for a few minutes, we instantly get stressed and ask, 'How do I get out of the situation?'"

The No. 1 complaint James gets on his Web site, drdriving.org, is about slow drivers clogging the fast lane.

But slowing down is exactly what HPD's Wauke wants people to do. He said speed will eventually cause a driver to be late, either because of an accident or a ticket.

"You better slow down," he said. "I'm tired of going to fatals and criticals."

APPENDIX F: COMPLETE ARTICLE ON HIGHWAY RACING IN HAWAII

Running the risk

Police say highway racing is not a big problem here, but they're concerned

By Jaymes K. Song
Star-Bulletin
August 22, 2003

▲▲▲

The road action typically happens between 11 p.m. and 1 a.m., says Travis Higa, co-owner of Hyper Sports Inc., a high-performance racing parts shop in Kakaako.

Maybe the drivers are going home after an evening at a friend's house or seeing a movie. One of them is speeding. The other revs his engine with a throaty roar, or just makes eye contact and nods slightly.

The challenge has been issued.

The race is on.

Police say highway racing is not a major problem on Oahu, despite March's racing accident on Moanalua Freeway in which Allan Magnaye, 17, was killed and eight other teen-agers were hospitalized.

They still are concerned, though, along with motorists such as David Ellis, who knows the scenario well: two or more cars zipping by, weaving in and out of traffic, tailgating and in many cases creating serious hazards.

"It's an obvious major accident in the making," said Ellis. "It's not going to be a one-car ding. It's going to be a multiple-car death."

Ellis, a Mililani Mauka/Launani Valley Neighborhood Board member, has seen racing on the H-2 Freeway several times, and said two cars recently flew by him at an estimated 120 mph.

"They were a couple kids in souped Hondas," said Ellis. "I'm doing 60, and they passed by me like I'm sitting still.

Police said Ellis' area has been a hot spot for highway racing for several years. Other areas they point to are along Kalanianaole Highway and the H-1 Freeway from Waipahu to Makakilo and near the airport.

Police advise drivers to stay out of the way of people racing or driving recklessly, and to call 911 as soon as possible. Traffic Capt. Bryan Wauke advises drivers to avoid making eye contact if challenged to a race or confrontation.

"Let it go," he said. "You've got to be the adult because with some people, you can't expect them to be."

Police have no statistics on how many people engage in highway racing, because there is no classification that separates it from speeding.

But Higa's brother, Lanny, has been in the fast lane many times. Now 23, he recalls racing on Oahu's roads and freeways as a teen, driven by a sense of competitiveness.

"Everybody did it," he said. "We'd just mess around and race."

He still gets his share of challenges, particularly when he's behind the wheel of his flashy blue-and-silver 1992 Honda Civic, a vehicle he bought three years ago for $7,000 and souped up with about $15,000 worth of upgrades.

But he sticks to normal speeds on public roadways now and takes his car to workshops where he tells teen-agers about the dangers of highway racing and urges them to restrict competitions to Hawaii Raceway Park.

"I don't want what happened to these guys," he said, referring to the Moanalua Freeway incident. "I don't want them to kill themselves."

Sgt. Manuel Barros of the Honolulu Police Department's solo-bike detail can recall raising dust himself along country roads in Kahuku in his younger days, driving "big ol' cars with big engines."

But now he is a father and grandfather and becomes angry when cars scream past at "easily 100 miles per hour."

HPD is committed to an "all-out effort" to keep cracking down on all speeders, Barros said. But even he doesn't expect to see a checkered flag in highway racing.

"We can preach, stop and tag cars all we want," he said. "But we're never going to stop it."

APPENDIX G: COMPLETE ARTICLE ON RACING COLLISION IN HAWAII

Racing suspected in fatal collision near Makua Cave

By Rod Ohira
Honolulu Advertiser
August 22, 2003

A 25-year-old Wai'anae man was killed and three others were injured in a two-car collision on Farrington Highway near Makua Cave early yesterday that may have involved racing.

In another fatal accident, two people were killed Wednesday night on the Big Island in an accident involving four vehicles in Puna near the Kamehameha Schools campus. Heavy rainfall appears to be a contributing factor, police said.

The man killed on O'ahu was pronounced dead at the scene of the 1:48 a.m. Farrington Highway collision, which involved a 1992 Honda Civic and 1989 Jeep Cherokee.

The man, who was driving the Honda, was killed even though the car's airbag deployed.

A Wai'anae girl, 16, who was a front-seat passenger in the Honda, and the 20-year-old female driver of the Cherokee were taken by helicopter to The Queen's Medical Center. Both were in serious condition. A man, 20, who was a passenger in the Cherokee, was taken to St. Francis Medical Center-West in good condition.

Vehicular homicide investigator Sgt. William Baldwin said a witness told police the Honda, which was headed toward Yokohama Bay, may have been racing with another vehicle. The Honda was on the wrong side of the road when the driver tried to avoid being struck by the oncoming Cherokee.

The Cherokee, however, hit the Honda on the front left side of the car, forcing it to the shoulder of the road.

Wai'anae Neighborhood Board chairman Glen Kila said speeding and racing are problems on that stretch of Farrington Highway. He said the two-lane highway is a straightaway for about two miles and is "very, very dangerous."

Kila said Makaha and Makua residents recently expressed their concerns at a board meeting because of the dangers they face while turning off the highway to the beach or their homes. Drivers are often speeding behind them and overtaking the slower cars.

Kila said the area needs to be monitored more frequently by police, warning signs installed and solid lines painted on the road as deterrence to passing. But he also said that drivers need to be reminded of the dangers of speeding.

"I know that people do care. It's just that the stretches are long and people lose sight of how fast they're going," Kila said.

Yesterday's death raises O'ahu's traffic fatality count for the year to 52. It was 41 at this date last year.

In the Puna crash, police say a 1999 Mazda pickup traveling north crossed the center lane at 6:24 p.m. and collided with a 1993 Subaru headed in the opposite direction. The Mazda continued on and collided with a 1994 Nissan sedan. Debris from the bed of the Mazda pickup caused damage to a Toyota pickup.

Conchita Tenorio, 36, and Loreto Tenorio Jr., 33, of Kurtistown, who were in the Subaru, were pronounced dead at the scene. A man, 24, who was a backseat passenger in the Subaru, was taken to Hilo Medical Center in serious condition.

The driver of the Mazda pickup, a 51-year-old woman, was also taken to Hilo Medical Center in serious condition.

Staff writer Curtis Lum contributed to this report.

APPENDIX H: SPEED CAMPAIGN IMPLEMENTED IN HAWAII

AIG HAWAII LAUNCHES HOT SPOTS SAFETY PROGRAM ENCOURAGING DRIVERS TO "SLOW DOWN"

November 22, 2002

Law enforcement officials blame extreme speeding as the cause of numerous traffic fatalities over the recent Veteran's Day weekend which resulted in six deaths. The traffic fatality count in the state for 2002 currently stands at 59. To help prevent future accidents caused by speeding, motorists and residents of Hawaii can look forward to a new program sponsored by AIG Hawaii entitled "Hot Spots" - a grassroots initiative designed to educate drivers of high-speeding zones throughout the state. The program will be introduced on Oahu with a kick-off event scheduled for Friday, November 22, 2002.

"We are very concerned with the high number of traffic accidents directly related to speeding. Through increased education and awareness, we can encourage drivers to slow down and prevent senseless accidents," said Robin Campaniano, president and Chief Executive Officer of AIG Hawaii Insurance Company.

Beginning at 7:00 A.M., students and teachers of Dole Intermediate, neighborhood board members, Honolulu Police Department's community policing program and employees of AIG Hawaii will line Kam IV road armed with signs alerting motorists to slow down. In addition, HPD will set-up an electronic speeding monitor sign and issue warnings to motorists as a reminder to slow down, especially in a school zone.

To address the number of accidents and traffic fatalities caused by speeding, AIG Hawaii is working with neighborhood boards, law enforcement, the public school system and citizens concerned about traffic safety to identify intersections or areas with high incidences of speeding-related accidents.

"Our students at Dole Intermediate will benefit from more awareness, especially from motorists who frequently drive through the area and forget we're in a school zone," said Myron Monte, principal at Dole Intermediate. "I'd hate to see any of our school children seriously hurt -the Hot Spots program certainly makes a difference."

Community response to the Hot Spots speeding awareness program has been positive. "We're glad AIG Hawaii has taken the lead on this important public safety issue," said Mary Rose McClleland, chairperson of the Kalihi Valley Neighborhood Board #16. In fact, the board voted unanimously to support the Hot Spots program and expects the full-participation of the board on November 22. Adds Mary Rose, "The problems in Kalihi are often ignored by the public and private sector; the support of AIG Hawaii will strengthen our community building efforts and help bring more resources into our neighborhood."

Hot Spots is especially timely given the high number of recent traffic fatalities and multi-car collisions as well as the upcoming holiday season. Thanks to input from members of the neighborhood boards, AIG Hawaii has identified the first of a series of Hot Spots areas on Oahu:

Kam IV Road - Fronting Dole Intermediate
Kunia Road
H-2 Corridor
Ft. Weaver Road
Pali Highway at Jack Lane

APPENDIX I: COMPLETE ARTICLE ON AUTOMATED CAMERA CAMPAIGN IN HAWAII

Camera Rage Strikes Hawaii Drivers

THE NEW YORK TIMES
January 27, 2002

HONOLULU, Jan. 26 -- Bumper stickers here shout the slogan "Slow down! This ain't the Mainland!" But drivers are now in open revolt over a program forcing them to drive more slowly.

This month the state began using digital cameras operated from unmarked vans and mounted near intersections to catch drivers who speed and run red lights on selected state roads and highways.

The response has been swift. Rebellious drivers have snapped up several thousand license covers that illegally obscure plates, owners of automobile-accessory shops say. They have sent angry letters to the local papers urging people not to pay their tickets. Cellphone brigades call morning radio shows to relay the vans' locations, and reports abound of drivers hurling obscene gestures, insults and even trash at the vans.

Some officials are even saying that the program may be working too well. "People are now driving too slow," said Carol Costa, a spokeswoman for the City of Honolulu "They're driving in packs so their plates can't be seen by the cameras. There are people who speed around the packs of cars. And the vans, of course, themselves are being targeted by drivers."

The effort has ignited such rage that some lawmakers are considering repealing it, and the City and County of Honolulu have bowed out of the antispeeding part of the program, saying it makes people drive erratically.

The three-year pilot program is being run by a technology company, ACS State and Local Solutions, which receives $29.75 for every citation paid. For a speeding citation, the state receives $27 plus $5 for every mile over the speed limit; the fine for running a red light is $77.
"There's a difference between going a little above the speed limit and reckless driving," said George Chan, a clerk for the State Department of Health who often travels the monitored roads. "The police have more discretion. The cameras just sit there and say `You're over the limit.' There's no reasonable leeway."

One group says the problem is not speeding, but the speed limits. At 55 miles per hour, Hawaii's speed limit is the lowest in the nation, according to the Insurance Institute for Highway Safety in Arlington, Va. On many major highways, which often front schools and residential areas, the limit drops to 45 or 35 m.p.h.

"This is an island of Sunday drivers," said Terry Poland, who owns a business center in a Waikiki hotel. "The speed limits are too slow. You have to ride the edge of the limit just to get anywhere."

Though the Hawaii Legislature authorized the cameras in 1998, it has taken the state this long to put the plan into effect. Now, proposals are being made to change the law. Among them are reviewing speed limits, treating the citations like parking tickets and repealing the legislation.

Joseph Souki, chairman of the House Transportation Committee, has introduced a bill to raise the statewide maximum speed limit to 65 m.p.h., though making changes on specific roads would be determined by traffic engineers.

In December, when the state issued warnings in a trial of the system, Ms. Kali said 50,000 vehicles were checked and 30 percent were speeding.

REFERENCE MATERIALS

Arnett J. (1996). *Sensation Seeking, Aggressiveness, and Adolescent Reckless Behavior*. Personality and Individual Differences, 20 (6), 693-702.

Boyce T E and Geller E S (2002), *An Instrumented Vehicle Assessment of Problem Behaviour and Driving Style: Do Younger Males Really Take More Risks?* Accident Analysis and Prevention, 34 (1), 51-64.

Brook L. (1987). *Attitudes to Road Traffic Law*. Contractor Report 59, Crowthorne: Transport and Road Research Laboratory.

Buchanan C. & Partners (1996). *The Speeding Driver*. Central Research Unit, Scottish Office.

Corbett C. (2001). *The Social Construction of Speeding as Not 'Real' Crime*. Crime Prevention and Community Safety: An International Journal, 2(4), 33-46.

Corbett C. and Simon F. (1999). *The Effects of Speed Cameras: How Drivers Respond*. DETR Road Safety Research Report No.11. London: DETR.

DETR (2000). *New Directions in Speed Management: A Review of Policy*. London: Department of the Environment, Transport and the Regions.

FHA (2003). *Speed Management Education Materials.* Washington, D.C: Federal Highway Administration. http://www.fhwa.dot.gov/safety/fourthlevel/pro_res_speedmgnt_scope.htm

Fildes, B.N., Rumbold G., and Leening, A. (1991). *Speed Behavior and Drivers' Attitude to Speeding.* Report No. 16, Victoria, Australia: Monash University Accident Research Centre.

Fildes, B.N. and Lee, S.J. (1993). *The Speed Review: Road Environment, Behavior, Speed Limits, Enforcement and Crashes.* Report No. CR 127, Canberra, Australia: Federal Office of Road Safety.

Haglund M. and Aberg L. (2000). *Speed Choice in Relation to Speed Limit and Influences From Other Drivers*. Transportation Research Part F 3, 39-51.

Hensley, A. (1999). *Speed Campaign Findings*. Christchurch City Council.

Hwysafety.org (2003). *Q&A: Speed and Speed Limits.* Insurance Institute for Highway Safety. http://www.hwysafety.org/safety%5Ffacts/qanda/speed%5Flimits.htm

Maekinen, T. and Oei, H.L. (1992). *Automatic Enforcement of Speed and Red Light Violations: Applications, Experiences and Developments.* Report No. R 92 58, Leidschendam: SWOV Institute For Road Safety Research.

NHTSA (1999). *Guidelines for Developing a Municipal Speed Enforcement Program.* Washington, D.C: National Highway Traffic Safety Administation. http://www.nhtsa.dot.gov/people/injury/enforce/program.htm

Parker, M.R., Jr. (1985). *Synthesis of Speed Zoning Practices.* Report No. FHWA/RD-85/096, Washington, D.C.: Federal Highway Administration.

Parker D., Reason J., Manstead A. and Stradling S. (1995), *Driving Errors, Driving Violations and Accident Involvement*. Ergonomics, 38 (5), 1036-1048.

Perrillo, K.V. (1997). *Effectiveness of Speed Trailer on Low-Speed Urban Roadway.* Master Thesis, College Station, TX: Texas A&M University.

Queensland Transport (1994). *Road Crashes in Queensland – A Report on the Road Toll: 1993*. Brisbane: Queensland Transport, Road and Safety Division.

Rietveld P. and Shefer D. (1998). *Speed Choice, Speed Variance and Speed Limits: A Second-Best Instrument to Correct For Road Transport Externalities*. Journal of Transport Economics and Policy, May, 32 (2), 187-202.

Rose G. (2000). *The Criminal Histories of Serious Traffic Offenders*. Home Office Research Study 206, London: HMSO.

Schulman, Ronca, & Bucuvalas, Inc (1999). *National Survey of Speeding and Other Unsafe Driving Actions*, *Volume III, Countermeasures.* Washington, D.C: National Highway Traffic Safety Administation.

Shinar, D. and Stiebel J. (1986). *The Effectiveness of Stationary Versus Moving Police Vehicle on Compliance with Speed Limit.* Human Factors, Vol. 28.

Silcock D., Smith K., Knox D., and Beuret K. (2000). *What Limits Speed? Factors That Affect How Fast We Drive, Final Report*. AA Foundation for Road Safety Research.

Solomon, D. (1964). *Accidents on Main Rural Highways Related to Speed, Driver, and Vehicle.* Washington, D.C.:Federal Highway Administration.

Stradling S., Meadows M., and Beatty S. (1999). *Factors Affecting Car Use Choices*. Transport Research Institute, Napier University.

Stradling S., Meadows M., and Beatty S. (2000a). *Characteristics of Speeding, Violating, and Thrill-Seeking Drivers.* International Conference on Traffic and Transport Psychology, Bern.

Stradling S., Meadows M., and Beatty S. (2000b). *Helping Drivers Out of Their Cars: Integrating Transport Policy and Social Psychology*. Transport Policy, 7 (3), 207 - 215.

Stradling S., Meadows M., and Beatty S. (2000c). *Driving as Part of Your Work May Damage Your Health.* Behavioural Research in Road Safety X, Crowthorne: Transport Research Laboratory.

Stradling S. and Campbell M. (2003). *The Speeding Driver: Who, How, and Why?* Transport Research Institute, Napier University.

Stuster, J.W. (1995). *Experimental Evaluation of Municipal Speed Enforcement Programs.* Report No. DOT HS 808 325, Washington D.C.: National Highway Traffic Safety Administration.

System Three (1997). *The Deterrent Effect of Enforcement in Road Safety*. Central Research Unit, Scottish Office.

Travelsafe (1992). *Report on Achieving High Levels of Compliance with Road Safety Laws – A Review of Road User Behavior Modification*. Brisbane: Queensland Parliamentary Travelsafe Committee.

Travelsafe (1994). *Speed Cameras: Should They Be Used in Queensland?* Brisbane: Queensland Parliamentary Travelsafe Committee.

Turner-Fairbank Highway Research Center (1992). *Effects of Lowering and Raising the Speed Limit.* Report No. FHWA-RD-92-084. Virginia: U.S. Department of Transportation.

Tyler T. (1990). *Why People Obey The Law*, New Haven, Yale University Press.

Warren, D.L. (1982). Chapter 17: *Speed Zoning and Control, Synthesis of Safety Research Related to Traffic Control and Roadway Elements.* Vol. 2. Report No. FHWA-TS-82-233, Washington, D.C.: Federal Highway Administration.

Wasielewski P. (1984), *Speed As a Measure of Driver Risk: Observed Speed Versus Driver and Vehicle Characteristics*. Accident Analysis and Prevention, 16 (2), 89-103.

Webster D. & Wells (2000). *The Characteristics of Speeders*. Report 440, Crowthorne: Transport Research Laboratory.